

I Claim:

1. A prosthesis assembly to replace a cephalad portion of a left natural facet joint on a vertebral body and a cephalad portion of a right natural facet joint on  
5 a vertebral body, the prosthesis assembly comprising  
a left prosthesis body accommodating fixation to the vertebral body at or near a left pedicle and without support by a lamina,  
an artificial left facet joint structure  
10 carried by the left prosthesis body adapted and configured to replace a cephalad portion of the left natural facet joint,  
a right prosthesis body accommodating fixation to the vertebral body at or near a left pedicle and  
15 without support by a lamina, and  
an artificial right facet joint structure carried by the right prosthesis body adapted and configured to replace a cephalad portion of the right natural facet joint.
- 20 2. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and right facet joint structures is fixed to the respective one of the left and right prosthesis bodies.
- 25 3. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and right facet joint structures is fixed to the respective one of the left and right prosthesis bodies by an adhesive or cement.
- 30 4. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and right facet joint structures is fixed to the respective one of the left and right prosthesis bodies by mechanical attachment.
- 35 5. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and

right facet joint structures is removably carried by the respective one of the left and right prosthesis bodies.

6. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and  
5 right facet joint structures is removably attached to the respective one of the left and right prosthesis bodies by frictional engagement.

7. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and  
10 right facet joint structures is removably attached to the respective one of the left and right prosthesis bodies by a Morse taper.

8. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and  
15 right facet joint structures comprises an insert fitted to the respective one of the left and right prosthesis bodies.

9. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and  
20 right facet joint structures comprises an insert fitted by frictional engagement to the respective one of the left and right prosthesis bodies.

10. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and  
25 right facet joint structures comprises an insert fitted by a Morse taper to the respective one of the left and right prosthesis bodies.

11. A prosthesis assembly according to claim 1 wherein at least one of the artificial facet  
30 joint structures comprises a removable insert fitted to the respective one of the left and right prosthesis bodies.

12. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and  
35 right facet joint structures pivots with respect to the

respective one of the left and right prosthesis bodies.

13. A prosthesis assembly according to claim 1  
wherein at least one of the prosthesis bodies  
includes a fastening element installed within the  
5 vertebral body at or near a pedicle.

14. A prosthesis assembly according to claim 13  
wherein the fastening element includes a screw  
installed within the vertebral body at or near a pedicle.

15. A prosthesis assembly according to claim 13  
10 wherein the fastening element includes a stem  
installed within the vertebral body at or near a pedicle.

16. A prosthesis assembly according to claim 13  
wherein the fastening element including means  
for resisting rotation after installation in the  
15 vertebral body.

17. A prosthesis assembly according to claim 1  
wherein at least one of the prosthesis bodies  
is fixed to the vertebral body by an adhesive or cement.

18. A prosthesis assembly according to claim 1  
20 wherein the prosthesis body includes a bony in-  
growth material.

19. A prosthesis assembly according to claim 1  
wherein at least one of the artificial left and  
right facet joint structures is adapted and configured to  
25 replace a natural articular process of a cephalad portion  
of the respective one of the left and right natural facet  
joints.

20. A prosthesis assembly according to claim 1  
wherein at least one of the artificial left and  
30 right facet joint structures is adapted and configured to  
replace a natural articular process of a cephalad portion  
of the respective one of the left and right natural facet  
joints after removal of at least some of a lamina from  
the vertebral body.

21. A prosthesis assembly according to claim 1  
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wherein at least one of the artificial left and right facet joint structures is adapted and configured to replace a natural articular process of a cephalad portion of the respective one of the left and right natural facet joints after removal of at least part of an accessory process from the vertebral body.

22. A prosthesis assembly according to claim 1 wherein at least one the artificial left and right facet joint structures is adapted and configured to replace a natural articular process of a cephalad portion of the respective one of the left and right natural facet joints after removal of at least part of a transverse process from the vertebral body.

23. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and right facet joint structures is adapted and configured to replace a natural articular process of a cephalad portion of the respective one of the left and right natural facet joints after removal of at least part of a pedicle from the vertebral body.

24. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and right facet joint structures is adapted and configured to replace a natural articular process of a cephalad portion of the respective one of the left and right natural facets joint after removal of at least some of the natural articular process from the vertebral body.

25. A prosthesis assembly according to claim 1 wherein at least the artificial left and right facet joint structures is adapted and configured to replace a natural articular process of a cephalad portion of the respective one of the left and right natural facet joints after removal of at least some of the natural articular process and of at least some of a lamina from the vertebral body.

26. A prosthesis assembly according to claim 1  
wherein at least one of the artificial left and  
right facet joint structures is adapted and configured to  
replace a natural articular process of a cephalad portion  
5 of the respective one of the left and right natural facet  
joints after removal of at least some of the natural  
articular process and of at least some of an accessory  
process from the vertebral body.

27. A prosthesis assembly according to claim 1  
10 wherein at least one of the artificial left and  
right facet joint structures is adapted and configured to  
replace a natural articular process of a cephalad portion  
of the respective one of the left and right natural facet  
joints after removal of at least some of the natural  
15 articular process and of at least part of a transverse  
process from the vertebral body.

28. A prosthesis assembly according to claim 1  
wherein at least one of the artificial left and  
right facet joint structures is adapted and configured to  
20 replace a natural articular process of a cephalad portion  
of the respective one of the left and right natural facet  
joints after removal of at least some of the natural  
articular process and of at least part of a pedicle from  
the vertebral body.

29. A prosthesis assembly according to claim 1  
25 wherein at least one of the artificial left and  
right facet joint structures is adapted and configured to  
replace a natural articular process of a cephalad portion  
of the respective one of the left and right natural facet  
30 joints, and

wherein at least one of the prosthesis bodies  
is adapted and configured to replace at least some of a  
lamina of the vertebral body.

30. A prosthesis assembly according to claim 1  
35 wherein at least one of the artificial left and

right facet joint structures is adapted and configured to replace a natural articular process of a cephalad portion of the respective one of the left and right natural facet joints, and

5                    wherein at least one of the prosthesis bodies is adapted and configured to replace at least some of a mamillary process of the vertebral body.

31. A prosthesis assembly according to claim 1  
10                    wherein at least one of the prosthesis bodies is adapted and configured to replace at least some of a lamina of the vertebral body.

32. A prosthesis assembly according to claim 1  
15                    wherein at least one of the prosthesis bodies is adapted and configured to replace at least some of a mamillary process of the vertebral body.

33. A prosthesis assembly according to claim 1  
                    wherein a connecting member joins the left and right prosthesis bodies without support by a lamina.

34. A prosthesis assembly according to claim 1  
20                    wherein at least one of the left and right prosthesis bodies includes a fastening element installed within the vertebral body at or near a pedicle, and  
                    wherein the at least one left and right prosthesis body includes a caudal region that extends  
25                    from the fastening element toward a cephalad portion of the respective one of the left and right natural facet joints.

35. A prosthesis according to claim 34  
                    wherein the respective one of the artificial  
30                    left and right facet joint structures is carried on the caudal region and is adapted and configured to replace a natural articular process of a cephalad portion of the respective one of the left and right natural facet joints.

35                    36. A prosthesis assembly according to claim 35

wherein the respective one of the artificial left and right facet joint structures is fixed to the caudal region.

5           37. A prosthesis assembly according to claim 35 wherein the respective one of the artificial left and right facet joint structures is fixed to the caudal region by an adhesive or cement.

10           38. A prosthesis assembly according to claim 35 wherein the respective one of the artificial left and right facet joint structures is fixed to the caudal region by mechanical attachment.

15           39. A prosthesis assembly according to claim 35 wherein the respective one of the artificial left and right facet joint structures is removably carried by the caudal region.

          40. A prosthesis assembly according to claim 35 wherein the respective one of the artificial left and right facet joint structures is removably attached to the caudal region by frictional engagement.

20           41. A prosthesis assembly according to claim 35 wherein the respective one of the artificial left and right facet joint structures is removably attached to the caudal region by a Morse taper.

25           42. A prosthesis assembly according to claim 35 wherein the respective one of the artificial left and right facet joint structures comprises an insert fitted to thecaudal region.

30           43. A prosthesis assembly according to claim 35 wherein the respective one of the artificial left and right facet joint structures comprises an insert fitted by frictional engagement to the caudal region.

35           44. A prosthesis assembly according to claim 35 wherein the respective one of the artificial left and right facet joint structures comprises an insert fitted by a Morse taper to the caudal region.

45. A prosthesis assembly according to claim 35 wherein the respective one of the artificial facet joint structures comprises a removable insert fitted to the caudal region.

5           46. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and right facet joint structures pivots with respect to the respective one of the left and right prosthesis bodies.

10           47. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and right facet joint structures is adapted and configured to articulate with a caudal portion of the respective one of the left and right facet joints of an adjoining vertebral body.

15           48. A prosthesis assembly according to claim 1 wherein at least one of the artificial left and right facet joint structures is made of at least one selected prosthetic material.

20           49. A prosthesis assembly according to claim 1 wherein the selected prosthetic material includes polyethylene, rubber, tantalum, titanium, chrome cobalt, surgical steel, bony in-growth material, ceramic, artificial bone, or a combination thereof.

25           50. A method of replacing, on a vertebral body, all or a portion of a cephalad portion of left natural facet joint and all or a portion of a cephalad portion of a right natural facet joint using the prosthesis assembly defined in claim 1 to provide improved support for the spinal column, the method comprising the steps of

30           (i) removing all or a portion of the cephalad portions of the left and right natural facet joints from the vertebral body, and

            (ii) fixing the prosthesis assembly as defined in claim 1 to the vertebral body to replace both removed  
35    cephalad portions of the left and right natural facet



joints with the artificial facet joint structure.

51. A method according to claim 50  
further including a step of removing at least  
part of an accessory process from the vertebral body.
- 5 52. A method according to claim 50  
further including a step of removing at least  
part of a transverse process from the vertebral body.
53. A method according to claim 50  
further including a step of removing at least
- 10 part of a pedicle from the vertebral body.